



4.12 Classwork

Name _____ Date _____

How can I shift a parabola?
Parabola Investigation

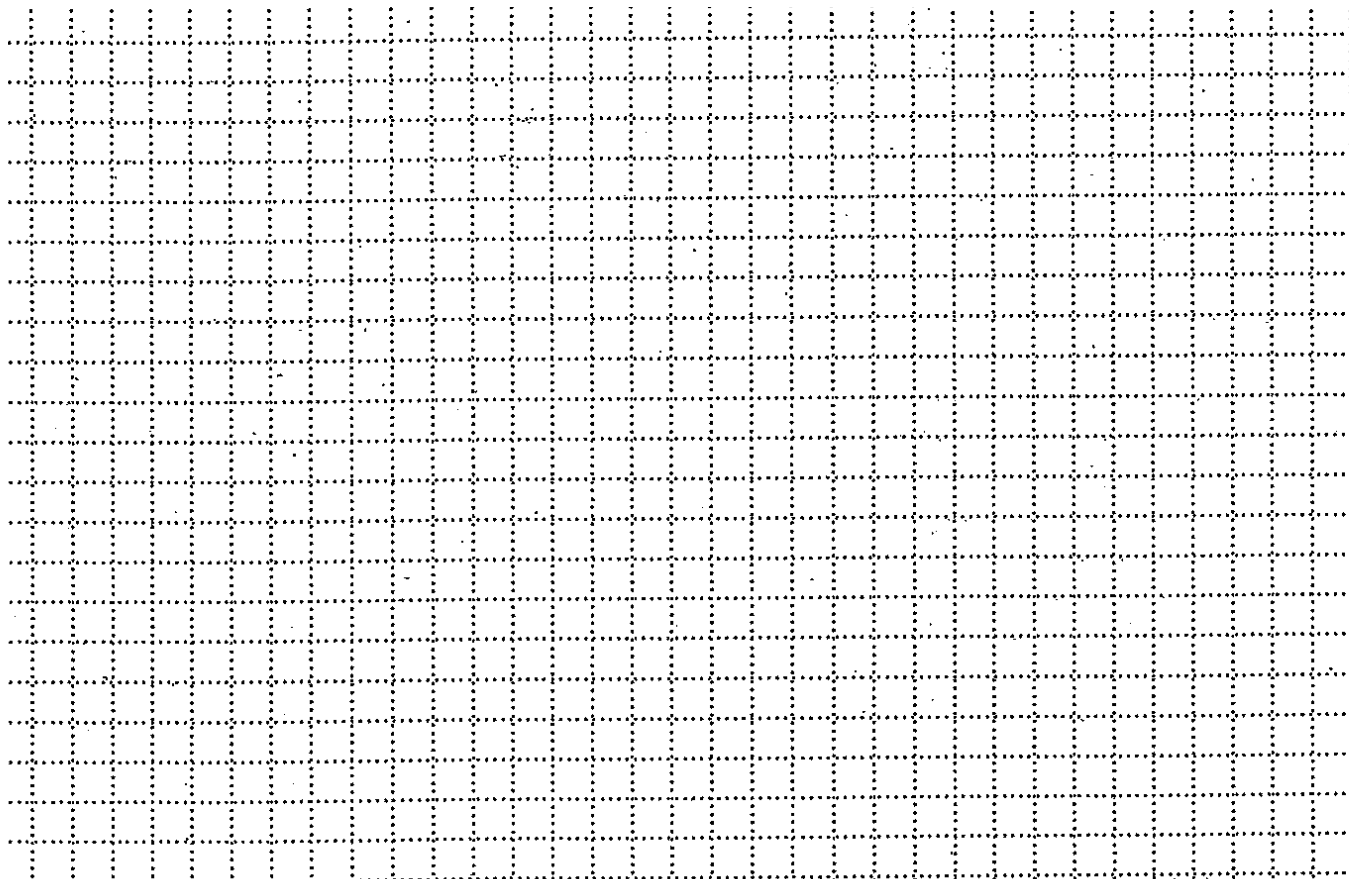
today's big goal Connect transformations of parabolas with their equations in graphing form.

4-12 Parabola Lab, Part 1

Have a group member read aloud.

- a. Read problem aloud from e-book.

Function: $y = (x-2)(x-2) \rightarrow$ Can also be written as: $y = \underline{\hspace{2cm}}$



- b. Read problem aloud from e-book. Equations of two parabolas with different graphs that **open upward** and have a **vertex at (2,0)**

$y = \underline{\hspace{2cm}}$ & $y = \underline{\hspace{2cm}}$

\rightarrow Add sketches of these graphs to your graph above (in a different color)

- c. Read problem aloud from e-book. Two different parabolas that **open downward**, each with its **vertex on the x-axis at x=2**.

$y = \underline{\hspace{2cm}}$ & $y = \underline{\hspace{2cm}}$

\rightarrow Add sketches of these graphs to your graph above (in a different color)

Lines of symmetry: $\underline{\hspace{2cm}}$ & $\underline{\hspace{2cm}}$

Describe how you changed the equation so that the parabola would open downward?

d. Read problem aloud from e-book. Equation of a parabola that opens downward with a vertex at $(-4,0)$.

$y =$ _____

Line of symmetry: _____

e. Read problem aloud from e-book.

Our new point on the x-axis: (_____ , _____)

Three equations of parabolas that touch the x-axis only at our point (above):

$y =$ _____

$y =$ _____

$y =$ _____

4-14 Parabola Lab, Part 2

Refer to e-book to read Polly Parabola's memo to your group!

Keep in mind these Discussion Points:

- ? What changes can we make to a parabola's graph?
- ? What changes can we make to the equation $y = x^2$?
- ? How do changes in the equation relate to changes in the graph?

4-15 Graph the parabola $y = x^2$ on the next page. Be sure to label any important points. When you are sure that your graph is complete and accurate, **trace over it in colored pencil**.

→ Refer to e-book for the next part of this problem. Record your results on the "Transforming Parabolas" page (attached)

→ When you are successful with each part of 4-15 (a-f), graph and label the equation on the same graph paper. Color code.

4-16 Find a way to change the equation to make the $y = x^2$ parabola *vertically compressed, open down, move six units up, and move two units to the left*?

$y =$ _____

Where is the vertex of your parabola? _____

4-17 Read aloud in e-book and discuss as a group.